

updated OXVIG1A.ST25.txt
SEQUENCE LISTING



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<110> OXVIG, Claus
      OVERGAARD, Michael T.

<120> PREGNANCY-ASSOCIATED PLASMA PROTEIN-A2 (PAPP-A2)

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<140> US 09/983,025
<141> 2001-10-22

<150> US 60/241,840
<151> 2000-10-20

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<170> PatentIn version 3.3

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Trp Ala Leu  Cys Ser Ala Asn Ser Glu Leu Gly Trp Thr Arg Lys Lys
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gct Ala	tct Ser	cca Pro	cag Gln
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cca Pro	gac Asp 110	ctg Leu	act Thr
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agt Ser	cct Pro	att Ile 135	ggg Gly
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Arg	Phe	Phe	Phe	Ser	Leu	Cys	Thr	Asp	Arg	Val	Lys	Lys	Ala	Thr	Ile		
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Leu	Pro	Gln	Ser	His	Phe	Gln	His	Ser	Ser	Gln	His	Ser	Ser	Gly	Glu		
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Glu	Pro	Glu	Pro	Thr	Ser	Asp	Thr	Cys	Gly	Phe	Thr	Arg	Phe	Pro	Gly	
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gag gct gtg ggg cct cct gat gtg gat cag ccc tgc gag cca agc tta Glu Ala Val Gly Pro Pro Asp Val Asp Gln Pro Cys Glu Pro Ser Leu 915 920 925			2784
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cag gtt ctc cgc gat ccc cca ttt gcc agt ggt ttg ccc gtg gtg Gln Val Leu Arg Asp Pro Pro Phe Ala Ser Gly Leu Pro Val Val 1055 1060 1065			3204
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tgc aca tca tac cat cca gat tta ccc aac cac cgt ccc cta act Cys Thr Ser Tyr His Pro Asp Leu Pro Asn His Arg Pro Leu Thr 1220 1225 1230			3699
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ctt Leu	cag Gln 1430	gcc Ala Ser Ser Gly	4329
att Ile	ctg Leu 1445	ctc Leu Thr Cys Ser	4374
tgc Cys	ctt Leu 1460	ccc Pro Val Asp Cys	4419
tat Tyr	gca Ala 1475	aac Asn Phe Ser Cys	4464
tgc Cys	tca Ser 1490	atc Ile Ser Cys Val	4509
cca Pro	tgg Trp 1505	ctg Leu Thr Cys Leu	4554
gtc Val	tac Tyr 1520	tgc Cys Lys Leu Glu	4599
gcc Ala	aac Asn 1535	ttg Leu Leu Leu Pro	4644
ggc Gly	acc Thr 1550	atc Ile Cys Lys Tyr	4689
gaa Glu	agt Ser 1565	gca Ala Glu Gly Lys	4734
tgc Cys	ctg Leu 1580	gaa Glu Gly Gly Ile	4779
gtg Val	tgt Cys 1595	gag Glu Pro Pro Pro	4824
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cag Gln	gaa Glu Arg	cg Glu Lys Leu Pro	4914

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cca cca ccc ccc tca gag ctg aat tct gtg gag tac aaa tgt gaa Pro Pro Pro Pro Ser Glu Leu Asn Ser Val Glu Tyr Lys Cys Glu 1655 1660 1665			5004
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tgc atc cag tca tgt gag ccc ttc caa gca gat ggt tgg tgt gac Cys Ile Gln Ser Cys Glu Pro Phe Gln Ala Asp Gly Trp Cys Asp 1730 1735 1740			5229
act atc aac aac cga gcc tac tgc cac tat gac ggg gga gac tgc Thr Ile Asn Asn Arg Ala Tyr Cys His Tyr Asp Gly Gly Asp Cys 1745 1750 1755			5274
tgc tct tcc aca ctc tcc tcc aag aag gtc att cca ttt gct gct Cys Ser Ser Thr Leu Ser Ser Lys Lys Val Ile Pro Phe Ala Ala 1760 1765 1770			5319
gac tgt gac ctg gat gag tgc acc tgc cgg gac ccc aag gca gaa Asp Cys Asp Leu Asp Glu Cys Thr Cys Arg Asp Pro Lys Ala Glu 1775 1780 1785			5364
gaa aat cag taactgtggg aacaagcccc tccctccact gcctcagagg Glu Asn Gln 1790			5413
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updated OXVIG1A.ST25.txt

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updated OXVIG1A.ST25.txt

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 ttgggaatgt agtgaaagga gctgatctac tgtattgtaa tgtaaacag ctacagccag 8473
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 <213> Homo sapiens

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 35 40 45

Arg Cys Trp Leu Gly Ala Lys Val Arg Arg Pro Arg Ala Ser Pro Gln
 50 55 60

His His Leu Phe Gly Val Tyr Pro Ser Arg Ala Gly Asn Tyr Leu Arg
 65 70 75 80

Pro Tyr Pro Val Gly Glu Gln Glu Ile His His Thr Gly Arg Ser Lys
 85 90 95

Pro Asp Thr Glu Gly Asn Ala Val Ser Leu Val Pro Pro Asp Leu Thr
 100 105 110

Glu Asn Pro Ala Gly Leu Arg Gly Ala Val Glu Glu Pro Ala Ala Pro
 115 120 125

Trp Val Gly Asp Ser Pro Ile Gly Gln Ser Glu Leu Leu Gly Asp Asp
 130 135 140

Asp Ala Tyr Leu Gly Asn Gln Arg Ser Lys Glu Ser Leu Gly Glu Ala
 145 150 155 160

Gly Ile Gln Lys Gly Ser Ala Met Ala Ala Thr Thr Thr Thr Ala Ile
 165 170 175

Phe Thr Thr Leu Asn Glu Pro Lys Pro Glu Thr Gln Arg Arg Gly Trp
 180 185 190

updated OXVIG1A.ST25.txt

Ala Lys Ser Arg Gln Arg Arg Gln Val Trp Lys Arg Arg Ala Glu Asp
195 200 205

Gly Gln Gly Asp Ser Gly Ile Ser Ser His Phe Gln Pro Trp Pro Lys
210 215 220

His Ser Leu Lys His Arg Val Lys Lys Ser Pro Pro Glu Glu Ser Asn
225 230 235 240

Gln Asn Gly Gly Glu Gly Ser Tyr Arg Glu Ala Glu Thr Phe Asn Ser
245 250 255

Gln Val Gly Leu Pro Ile Leu Tyr Phe Ser Gly Arg Arg Glu Arg Leu
260 265 270

Leu Leu Arg Pro Glu Val Leu Ala Glu Ile Pro Arg Glu Ala Phe Thr
275 280 285

Val Glu Ala Trp Val Lys Pro Glu Gly Gly Gln Asn Asn Pro Ala Ile
290 295 300

Ile Ala Gly Val Phe Asp Asn Cys Ser His Thr Val Ser Asp Lys Gly
305 310 315 320

Trp Ala Leu Gly Ile Arg Ser Gly Lys Asp Lys Gly Lys Arg Asp Ala
325 330 335

Arg Phe Phe Phe Ser Leu Cys Thr Asp Arg Val Lys Lys Ala Thr Ile
340 345 350

Leu Ile Ser His Ser Arg Tyr Gln Pro Gly Thr Trp Thr His Val Ala
355 360 365

Ala Thr Tyr Asp Gly Arg His Met Ala Leu Tyr Val Asp Gly Thr Gln
370 375 380

Val Ala Ser Ser Leu Asp Gln Ser Gly Pro Leu Asn Ser Pro Phe Met
385 390 395 400

Ala Ser Cys Arg Ser Leu Leu Leu Gly Gly Asp Ser Ser Glu Asp Gly
405 410 415

His Tyr Phe Arg Gly His Leu Gly Thr Leu Val Phe Trp Ser Thr Ala
420 425 430

Leu Pro Gln Ser His Phe Gln His Ser Ser Gln His Ser Ser Gly Glu
435 440 445

Glu Glu Ala Thr Asp Leu Val Leu Thr Ala Ser Phe Glu Pro Val Asn
450 455 460

updated OXVIG1A.ST25.txt

Thr Glu Trp Val Pro Phe Arg Asp Glu Lys Tyr Pro Arg Leu Glu Val
 465 470 475 480
 Leu Gln Gly Phe Glu Pro Glu Pro Glu Ile Leu Ser Pro Leu Gln Pro
 485 490 495
 Pro Leu Cys Gly Gln Thr Val Cys Asp Asn Val Glu Leu Ile Ser Gln
 500 505 510
 Tyr Asn Gly Tyr Trp Pro Leu Arg Gly Glu Lys Val Ile Arg Tyr Gln
 515 520 525
 Val Val Asn Ile Cys Asp Asp Glu Gly Leu Asn Pro Ile Val Ser Glu
 530 535 540
 Glu Gln Ile Arg Leu Gln His Glu Ala Leu Asn Glu Ala Phe Ser Arg
 545 550 555 560
 Tyr Asn Ile Ser Trp Gln Leu Ser Val His Gln Val His Asn Ser Thr
 565 570 575
 Leu Arg His Arg Val Val Leu Val Asn Cys Glu Pro Ser Lys Ile Gly
 580 585 590
 Asn Asp His Cys Asp Pro Glu Cys Glu His Pro Leu Thr Gly Tyr Asp
 595 600 605
 Gly Gly Asp Cys Arg Leu Gln Gly Arg Cys Tyr Ser Trp Asn Arg Arg
 610 615 620
 Asp Gly Leu Cys His Val Glu Cys Asn Asn Met Leu Asn Asp Phe Asp
 625 630 635
 Asp Gly Asp Cys Cys Asp Pro Gln Val Ala Asp Val Arg Lys Thr Cys
 645 650 655
 Phe Asp Pro Asp Ser Pro Lys Arg Ala Tyr Met Ser Val Lys Glu Leu
 660 665 670
 Lys Glu Ala Leu Gln Leu Asn Ser Thr His Phe Leu Asn Ile Tyr Phe
 675 680 685
 Ala Ser Ser Val Arg Glu Asp Leu Ala Gly Ala Ala Thr Trp Pro Trp
 690 695 700
 Asp Lys Asp Ala Val Thr His Leu Gly Gly Ile Val Leu Ser Pro Ala
 705 710 715 720
 Tyr Tyr Gly Met Pro Gly His Thr Asp Thr Met Ile His Glu Val Gly
 725 730 735

updated OXVIG1A.ST25.txt

His Val Leu Gly Leu Tyr His Val Phe Lys Gly Val Ser Glu Arg Glu
 740 745 750
 Ser Cys Asn Asp Pro Cys Lys Glu Thr Val Pro Ser Met Glu Thr Gly
 755 760 765
 Asp Leu Cys Ala Asp Thr Ala Pro Thr Pro Lys Ser Glu Leu Cys Arg
 770 775 780
 Glu Pro Glu Pro Thr Ser Asp Thr Cys Gly Phe Thr Arg Phe Pro Gly
 785 790 795 800
 Ala Pro Phe Thr Asn Tyr Met Ser Tyr Thr Asp Asp Asn Cys Thr Asp
 805 810 815
 Asn Phe Thr Pro Asn Gln Val Ala Arg Met His Cys Tyr Leu Asp Leu
 820 825 830
 Val Tyr Gln Gln Trp Thr Glu Ser Arg Lys Pro Thr Pro Ile Pro Ile
 835 840 845
 Pro Pro Met Val Ile Gly Gln Thr Asn Lys Ser Leu Thr Ile His Trp
 850 855 860
 Leu Pro Pro Ile Ser Gly Val Val Tyr Asp Arg Ala Ser Gly Ser Leu
 865 870 875 880
 Cys Gly Ala Cys Thr Glu Asp Gly Thr Phe Arg Gln Tyr Val His Thr
 885 890 895
 Ala Ser Ser Arg Arg Val Cys Asp Ser Ser Gly Tyr Trp Thr Pro Glu
 900 905 910
 Glu Ala Val Gly Pro Pro Asp Val Asp Gln Pro Cys Glu Pro Ser Leu
 915 920 925
 Gln Ala Trp Ser Pro Glu Val His Leu Tyr His Met Asn Met Thr Val
 930 935 940
 Pro Cys Pro Thr Glu Gly Cys Ser Leu Glu Leu Leu Phe Gln His Pro
 945 950 955 960
 Val Gln Ala Asp Thr Leu Thr Leu Trp Val Thr Ser Phe Phe Met Glu
 965 970 975
 Ser Ser Gln Val Leu Phe Asp Thr Glu Ile Leu Leu Glu Asn Lys Glu
 980 985 990
 Ser Val His Leu Gly Pro Leu Asp Thr Phe Cys Asp Ile Pro Leu Thr
 995 1000 1005

updated OXVIG1A.ST25.txt

Ile	Lys 1010	Leu	His	Val	Asp	Gly 1015	Lys	Val	Ser	Gly	Val 1020	Lys	Val	Tyr
Thr	Phe 1025	Asp	Glu	Arg	Ile	Glu 1030	Ile	Asp	Ala	Ala	Leu 1035	Leu	Thr	Ser
Gln	Pro 1040	His	Ser	Pro	Leu	Cys 1045	Ser	Gly	Cys	Arg	Pro 1050	Val	Arg	Tyr
Gln	Val 1055	Leu	Arg	Asp	Pro	Pro 1060	Phe	Ala	Ser	Gly	Leu 1065	Pro	Val	Val
Val	Thr 1070	His	Ser	His	Arg	Lys 1075	Phe	Thr	Asp	Val	Glu 1080	Val	Thr	Pro
Gly	Gln 1085	Met	Tyr	Gln	Tyr	Gln 1090	Val	Leu	Ala	Glu	Ala 1095	Gly	Gly	Glu
Leu	Gly 1100	Glu	Ala	Ser	Pro	Pro 1105	Leu	Asn	His	Ile	His 1110	Gly	Ala	Pro
Tyr	Cys 1115	Gly	Asp	Gly	Lys	Val 1120	Ser	Glu	Arg	Leu	Gly 1125	Glu	Glu	Cys
Asp	Asp 1130	Gly	Asp	Leu	Val	Ser 1135	Gly	Asp	Gly	Cys	Ser 1140	Lys	Val	Cys
Glu	Leu 1145	Glu	Glu	Gly	Phe	Asn 1150	Cys	Val	Gly	Glu	Pro 1155	Ser	Leu	Cys
Tyr	Met 1160	Tyr	Glu	Gly	Asp	Gly 1165	Ile	Cys	Glu	Pro	Phe 1170	Glu	Arg	Lys
Thr	Ser 1175	Ile	Val	Asp	Cys	Gly 1180	Ile	Tyr	Thr	Pro	Lys 1185	Gly	Tyr	Leu
Asp	Gln 1190	Trp	Ala	Thr	Arg	Ala 1195	Tyr	Ser	Ser	His	Glu 1200	Asp	Lys	Lys
Lys	Cys 1205	Pro	Val	Ser	Leu	Val 1210	Thr	Gly	Glu	Pro	His 1215	Ser	Leu	Ile
Cys	Thr 1220	Ser	Tyr	His	Pro	Asp 1225	Leu	Pro	Asn	His	Arg 1230	Pro	Leu	Thr
Gly	Trp 1235	Phe	Pro	Cys	Val	Ala 1240	Ser	Glu	Asn	Glu	Thr 1245	Gln	Asp	Asp
Arg	Ser 1250	Glu	Gln	Pro	Glu	Gly 1255	Ser	Leu	Lys	Lys	Glu 1260	Asp	Glu	Val

updated OXVIG1A.ST25.txt

Trp	Leu	Lys	Val	Cys	Phe	Asn	Arg	Pro	Gly	Glu	Ala	Arg	Ala	Ile
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	1280					1285					1290			
Gln	Pro	Thr	Val	Thr	Leu	Tyr	Leu	Thr	Asp	Val	Arg	Gly	Ser	Asn
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His	Ser	Leu	Gly	Thr	Tyr	Gly	Leu	Ser	Cys	Gln	His	Asn	Pro	Leu
	1310					1315					1320			
Ile	Ile	Asn	Val	Thr	His	His	Gln	Asn	Val	Leu	Phe	His	His	Thr
	1325					1330					1335			
Thr	Ser	Val	Leu	Leu	Asn	Phe	Ser	Ser	Pro	Arg	Val	Gly	Ile	Ser
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Ala	Val	Ala	Leu	Arg	Thr	Ser	Ser	Arg	Ile	Gly	Leu	Ser	Ala	Pro
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Ser	Asn	Cys	Ile	Ser	Glu	Asp	Glu	Gly	Gln	Asn	His	Gln	Gly	Gln
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Ser	Cys	Ile	His	Arg	Pro	Cys	Gly	Lys	Gln	Asp	Ser	Cys	Pro	Ser
	1385					1390					1395			
Leu	Leu	Leu	Asp	His	Ala	Asp	Val	Val	Asn	Cys	Thr	Ser	Ile	Gly
	1400					1405					1410			
Pro	Gly	Leu	Met	Lys	Cys	Ala	Ile	Thr	Cys	Gln	Arg	Gly	Phe	Ala
	1415					1420					1425			
Leu	Gln	Ala	Ser	Ser	Gly	Gln	Tyr	Ile	Arg	Pro	Met	Gln	Lys	Glu
	1430					1435					1440			
Ile	Leu	Leu	Thr	Cys	Ser	Ser	Gly	His	Trp	Asp	Gln	Asn	Val	Ser
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Cys	Leu	Pro	Val	Asp	Cys	Gly	Val	Pro	Asp	Pro	Ser	Leu	Val	Asn
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Tyr	Ala	Asn	Phe	Ser	Cys	Ser	Glu	Gly	Thr	Lys	Phe	Leu	Lys	Arg
	1475					1480					1485			
Cys	Ser	Ile	Ser	Cys	Val	Pro	Pro	Ala	Lys	Leu	Gln	Gly	Leu	Ser
	1490					1495					1500			
Pro	Trp	Leu	Thr	Cys	Leu	Glu	Asp	Gly	Leu	Trp	Ser	Leu	Pro	Glu
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updated OXVIG1A.ST25.txt

Val	Tyr	Cys	Lys	Leu	Glu	Cys	Asp	Ala	Pro	Pro	Ile	Ile	Leu	Asn
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	1550					1555					1560			
Glu	Ser	Ala	Glu	Gly	Lys	Val	Arg	Asn	Lys	Leu	Leu	Lys	Ile	Gln
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Cys	Leu	Glu	Gly	Gly	Ile	Trp	Glu	Gln	Gly	Ser	Cys	Ile	Pro	Val
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Val	Cys	Glu	Pro	Pro	Pro	Pro	Val	Phe	Glu	Gly	Met	Tyr	Glu	Cys
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Thr	Asn	Gly	Phe	Ser	Leu	Asp	Ser	Gln	Cys	Val	Leu	Asn	Cys	Asn
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Trp	Thr	Gln	Glu	Phe	Lys	Leu	Cys	Glu	Asn	Leu	Gln	Gly	Glu	Cys
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Pro	Pro	Pro	Pro	Ser	Glu	Leu	Asn	Ser	Val	Glu	Tyr	Lys	Cys	Glu
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Thr	Leu	Glu	His	Trp	Met	Glu	Pro	Val	Lys	Val	Gln	Ser	Ile	Val
	1700					1705					1710			
Cys	Thr	Gly	Arg	Arg	Gln	Trp	His	Pro	Asp	Pro	Val	Leu	Val	His
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Cys	Ile	Gln	Ser	Cys	Glu	Pro	Phe	Gln	Ala	Asp	Gly	Trp	Cys	Asp
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updated OXVIG1A.ST25.txt

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Glu Asn Gln
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20

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<220>
<223> primer PR-N3

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<223> primer RT-C

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 <223> primer PR-C3

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Lys Leu Gly Pro
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Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
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Asn Ser Ala Val Asp
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<210> 21
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 Page 20

updated OXVIG1A.ST25.txt

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tccgctcgag atggtgttgc tcaccgcggt 30

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<223> primer containing HindIII site, for amplifying IGFBP-5 cDNA

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cgataagctt ctcaacgttg ctgctgtcg 29

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<223> N-terminal sequence of degradation product of purified rIGFBP-5
digested with PAPP-A2

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Lys Phe Val Gly Gly Ala
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<211> 6
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<223> N-terminal sequence of degradation product of purified rIGFBP-5
digested with PAPP-A2

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Leu Gly Xaa Phe Val His
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Met Arg Leu Trp Ser Trp Val Leu His Leu Gly Leu Leu Ser Ala Ala
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Leu Gly Cys Gly Leu Ala Glu Arg Pro Arg Arg Ala Arg Arg Asp Pro
20 25 30

updated OXVIG1A.ST25.txt

Arg Ala Gly Arg Pro Pro Arg Pro Ala Ala Gly Pro Ala Thr Cys Ala
35 40 45

Thr Arg Gly Pro Arg Pro Pro Arg Leu Ala Ala Ala Ala Ala Ala Ala
50 55 60

Gly Arg Ala Trp Glu Ala Val Arg Val Pro Arg Arg Arg Gln Gln Arg
65 70 75 80

Glu Ala Arg Gly Ala Thr Glu Glu Pro Ser Pro Pro Ser Arg Ala Leu
85 90 95

Tyr Phe Ser Gly Arg Gly Glu Gln Leu Arg Val Leu Arg Ala Asp Leu
100 105 110

Glu Leu Pro Arg Asp Ala Phe Thr Leu Gln Val Trp Leu Arg Ala Glu
115 120 125

Gly Gly Gln Arg Ser Pro Ala Val Ile Thr Gly Leu Tyr Asp Lys Cys
130 135 140

Ser Tyr Ile Ser Arg Asp Arg Gly Trp Val Val Gly Ile His Thr Ile
145 150 155 160

Ser Asp Gln Asp Asn Lys Asp Pro Arg Tyr Phe Phe Ser Leu Lys Thr
165 170 175

Asp Arg Ala Arg Gln Val Thr Thr Ile Asn Ala His Arg Ser Tyr Leu
180 185 190

Pro Gly Gln Trp Val Tyr Leu Ala Ala Thr Tyr Asp Gly Gln Phe Met
195 200 205

Lys Leu Tyr Val Asn Gly Ala Gln Val Ala Thr Ser Gly Glu Gln Val
210 215 220

Gly Gly Ile Phe Ser Pro Leu Thr Gln Lys Cys Lys Val Leu Met Leu
225 230 235 240

Gly Gly Ser Ala Leu Asn His Asn Tyr Arg Gly Tyr Ile Glu His Phe
245 250 255

Ser Leu Trp Lys Val Ala Arg Thr Gln Arg Glu Ile Leu Ser Asp Met
260 265 270

Glu Thr His Gly Ala His Thr Ala Leu Pro Gln Leu Leu Leu Gln Glu
275 280 285

Asn Trp Asp Asn Val Lys His Ala Trp Ser Pro Met Lys Asp Gly Ser
290 295 300

updated OXVIG1A.ST25.txt

Ser Pro Lys Val Glu Phe Ser Asn Ala His Gly Phe Leu Leu Asp Thr
305 310 315 320

Ser Leu Glu Pro Pro Leu Cys Gly Gln Thr Leu Cys Asp Asn Thr Glu
325 330 335

Val Ile Ala Ser Tyr Asn Gln Leu Ser Ser Phe Arg Gln Pro Lys Val
340 345 350

Val Arg Tyr Arg Val Val Asn Leu Tyr Glu Asp Asp His Lys Asn Pro
355 360 365

Thr Val Thr Arg Glu Gln Val Asp Phe Gln His His Gln Leu Ala Glu
370 375 380

Ala Phe Lys Gln Tyr Asn Ile Ser Trp Glu Leu Asp Val Leu Glu Val
385 390 395 400

Ser Asn Ser Ser Leu Arg Arg Arg Leu Ile Leu Ala Asn Cys Asp Ile
405 410 415

Ser Lys Ile Gly Asp Glu Asn Cys Asp Pro Glu Cys Asn His Thr Leu
420 425 430

Thr Gly His Asp Gly Gly Asp Cys Arg His Leu Arg His Pro Ala Phe
435 440 445

Val Lys Lys Gln His Asn Gly Val Cys Asp Met Asp Cys Asn Tyr Glu
450 455 460

Arg Phe Asn Phe Asp Gly Gly Glu Cys Cys Asp Pro Glu Ile Thr Asn
465 470 475 480

Val Thr Gln Thr Cys Phe Asp Pro Asp Ser Pro His Arg Ala Tyr Leu
485 490 495

Asp Val Asn Glu Leu Lys Asn Ile Leu Lys Leu Asp Gly Ser Thr His
500 505 510

Leu Asn Ile Phe Phe Ala Lys Ser Ser Glu Glu Glu Leu Ala Gly Val
515 520 525

Ala Thr Trp Pro Trp Asp Lys Glu Ala Leu Met His Leu Gly Gly Ile
530 535 540

Val Leu Asn Pro Ser Phe Tyr Gly Met Pro Gly His Thr His Thr Met
545 550 555 560

Ile His Glu Ile Gly His Ser Leu Gly Leu Tyr His Val Phe Arg Gly
565 570 575

updated OXVIG1A.ST25.txt

Ile Ser Glu Ile Gln Ser Cys Ser Asp Pro Cys Met Glu Thr Glu Pro
580 585 590

Ser Phe Glu Thr Gly Asp Leu Cys Asn Asp Thr Asn Pro Ala Pro Lys
595 600 605

His Lys Ser Cys Gly Asp Pro Gly Pro Gly Asn Asp Thr Cys Gly Phe
610 615 620

His Ser Phe Phe Asn Thr Pro Tyr Asn Asn Phe Met Ser Tyr Ala Asp
625 630 635 640

Asp Asp Cys Thr Asp Ser Phe Thr Pro Asn Gln Val Ala Arg Met His
645 650 655

Cys Tyr Leu Asp Leu Val Tyr Gln Gly Trp Gln Pro Ser Arg Lys Pro
660 665 670

Ala Pro Val Ala Leu Ala Pro Gln Val Leu Gly His Thr Thr Asp Ser
675 680 685

Val Thr Leu Glu Trp Phe Pro Pro Ile Asp Gly His Phe Phe Glu Arg
690 695 700

Glu Leu Gly Ser Ala Cys His Leu Cys Leu Glu Gly Arg Ile Leu Val
705 710 715 720

Gln Tyr Ala Ser Asn Ala Ser Ser Pro Met Pro Cys Ser Pro Ser Gly
725 730 735

His Trp Ser Pro Arg Glu Ala Glu Gly His Pro Asp Val Glu Gln Pro
740 745 750

Cys Lys Ser Ser Val Arg Thr Trp Ser Pro Asn Ser Ala Val Asn Pro
755 760 765

His Thr Val Pro Pro Ala Cys Pro Glu Pro Gln Gly Cys Tyr Leu Glu
770 775 780

Leu Glu Phe Leu Tyr Pro Leu Val Pro Glu Ser Leu Thr Ile Trp Val
785 790 795 800

Thr Phe Val Ser Thr Asp Trp Asp Ser Ser Gly Ala Val Asn Asp Ile
805 810 815

Lys Leu Leu Ala Val Ser Gly Lys Asn Ile Ser Leu Gly Pro Gln Asn
820 825 830

Val Phe Cys Asp Val Pro Leu Thr Ile Arg Leu Trp Asp Val Gly Glu
835 840 845

updated OXVIG1A.ST25.txt

Glu Val Tyr Gly Ile Gln Ile Tyr Thr Leu Asp Glu His Leu Glu Ile
850 855 860

Asp Ala Ala Met Leu Thr Ser Thr Ala Asp Thr Pro Leu Cys Leu Gln
865 870 875 880

Cys Lys Pro Leu Lys Tyr Lys Val Val Arg Asp Pro Pro Leu Gln Met
885 890 895

Asp Val Ala Ser Ile Leu His Leu Asn Arg Lys Phe Val Asp Met Asp
900 905 910

Leu Asn Leu Gly Ser Val Tyr Gln Tyr Trp Val Ile Thr Ile Ser Gly
915 920 925

Thr Glu Glu Ser Glu Pro Ser Pro Ala Val Thr Tyr Ile His Gly Arg
930 935 940

Gly Tyr Cys Gly Asp Gly Ile Ile Gln Lys Asp Gln Gly Glu Gln Cys
945 950 955 960

Asp Asp Met Asn Lys Ile Asn Gly Asp Gly Cys Ser Leu Phe Cys Arg
965 970 975

Gln Glu Val Ser Phe Asn Cys Ile Asp Glu Pro Ser Arg Cys Tyr Phe
980 985 990

His Asp Gly Asp Gly Val Cys Glu Glu Phe Glu Gln Lys Thr Ser Ile
995 1000 1005

Lys Asp Cys Gly Val Tyr Thr Pro Gln Gly Phe Leu Asp Gln Trp
1010 1015 1020

Ala Ser Asn Ala Ser Val Ser His Gln Asp Gln Gln Cys Pro Gly
1025 1030 1035

Trp Val Ile Ile Gly Gln Pro Ala Ala Ser Gln Val Cys Arg Thr
1040 1045 1050

Lys Val Ile Asp Leu Ser Glu Gly Ile Ser Gln His Ala Trp Tyr
1055 1060 1065

Pro Cys Thr Ile Ser Tyr Pro Tyr Ser Gln Leu Ala Gln Thr Thr
1070 1075 1080

Phe Trp Leu Arg Ala Tyr Phe Ser Gln Pro Met Val Ala Ala Ala
1085 1090 1095

Val Ile Val His Leu Val Thr Asp Gly Thr Tyr Tyr Gly Asp Gln
1100 1105 1110

updated OXVIG1A.ST25.txt

Lys	Gln	Glu	Thr	Ile	Ser	Val	Gln	Leu	Leu	Asp	Thr	Lys	Asp	Gln
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1130						1135					1140			
Leu	Ile	Ile	Pro	Val	Val	His	Asp	Leu	Ser	Gln	Pro	Phe	Tyr	His
1145						1150					1155			
Ser	Gln	Ala	Val	Arg	Val	Ser	Phe	Ser	Ser	Pro	Leu	Val	Ala	Ile
1160						1165					1170			
Ser	Gly	Val	Ala	Leu	Arg	Ser	Phe	Asp	Asn	Phe	Asp	Pro	Val	Thr
1175						1180					1185			
Leu	Ser	Ser	Cys	Gln	Arg	Gly	Glu	Thr	Tyr	Ser	Pro	Ala	Glu	Gln
1190						1195					1200			
Ser	Cys	Val	His	Phe	Ala	Cys	Glu	Lys	Thr	Asp	Cys	Pro	Glu	Leu
1205						1210					1215			
Ala	Val	Glu	Asn	Ala	Ser	Leu	Asn	Cys	Ser	Ser	Ser	Asp	Arg	Tyr
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His	Gly	Ala	Gln	Cys	Thr	Val	Ser	Cys	Arg	Thr	Gly	Tyr	Val	Leu
1235						1240					1245			
Gln	Ile	Arg	Arg	Asp	Asp	Glu	Leu	Ile	Lys	Ser	Gln	Thr	Gly	Pro
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Ser	Val	Thr	Val	Thr	Cys	Thr	Glu	Gly	Lys	Trp	Asn	Lys	Gln	Val
1265						1270					1275			
Ala	Cys	Glu	Pro	Val	Asp	Cys	Ser	Ile	Pro	Asp	His	His	Gln	Val
1280						1285					1290			
Tyr	Ala	Ala	Ser	Phe	Ser	Cys	Pro	Glu	Gly	Thr	Thr	Phe	Gly	Ser
1295						1300					1305			
Gln	Cys	Ser	Phe	Gln	Cys	Arg	His	Pro	Ala	Gln	Leu	Lys	Gly	Asn
1310						1315					1320			
Asn	Ser	Leu	Leu	Thr	Cys	Met	Glu	Asp	Gly	Leu	Trp	Ser	Phe	Pro
1325						1330					1335			
Glu	Ala	Leu	Cys	Glu	Leu	Met	Cys	Leu	Ala	Pro	Pro	Pro	Val	Pro
1340						1345					1350			
Asn	Ala	Asp	Leu	Gln	Thr	Ala	Arg	Cys	Arg	Glu	Asn	Lys	His	Lys
1355						1360					1365			

Val	Gly	Ser	Phe	Cys	Lys	Tyr	Lys	Cys	Lys	Pro	Gly	Tyr	His	Val
1370						1375					1380			
Pro	Gly	Ser	Ser	Arg	Lys	Ser	Lys	Lys	Arg	Ala	Phe	Lys	Thr	Gln
1385						1390					1395			
Cys	Thr	Gln	Asp	Gly	Ser	Trp	Gln	Glu	Gly	Ala	Cys	Val	Pro	Val
1400						1405					1410			
Thr	Cys	Asp	Pro	Pro	Pro	Pro	Lys	Phe	His	Gly	Leu	Tyr	Gln	Cys
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Thr	Asn	Gly	Phe	Gln	Phe	Asn	Ser	Glu	Cys	Arg	Ile	Lys	Cys	Glu
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Asp	Ser	Asp	Ala	Ser	Gln	Gly	Leu	Gly	Ser	Asn	Val	Ile	His	Cys
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Arg	Lys	Asp	Gly	Thr	Trp	Asn	Gly	Ser	Phe	His	Val	Cys	Gln	Glu
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Met	Gln	Gly	Gln	Cys	Ser	Val	Pro	Asn	Glu	Leu	Asn	Ser	Asn	Leu
1475						1480					1485			
Lys	Leu	Gln	Cys	Pro	Asp	Gly	Tyr	Ala	Ile	Gly	Ser	Glu	Cys	Ala
1490						1495					1500			
Thr	Ser	Cys	Leu	Asp	His	Asn	Ser	Glu	Ser	Ile	Ile	Leu	Pro	Met
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Asn	Val	Thr	Val	Arg	Asp	Ile	Pro	His	Trp	Leu	Asn	Pro	Thr	Arg
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Pro	Ala	Leu	Ile	His	Cys	Val	Lys	Gly	Cys	Glu	Pro	Phe	Met	Gly
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1580						1585					1590			
Thr	Pro	Phe	Pro	Met	Ser	Cys	Asp	Leu	Gln	Gly	Asp	Cys	Ala	Cys
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Tyr Ser His Gly
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